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In re application of: David Charles Bennett, et al.

Serial No.: 09/840253

Filed: April 23, 2001

Title: Protocol Parser - Code Generator

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U.S. Patent & Trademark Office  
Washington, D.C. 20231

TRANSMITTAL OF FORMAL DRAWINGS

Please find attached:

- (a) the formal drawings for this application  
Number of Sheets 43

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**CERTIFICATE OF MAILING (37 C.F.R. § 1.8(a))**

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Filed: April 23, 2001

For: Protocol Parser – Code Generator

I hereby certify that the following documents:

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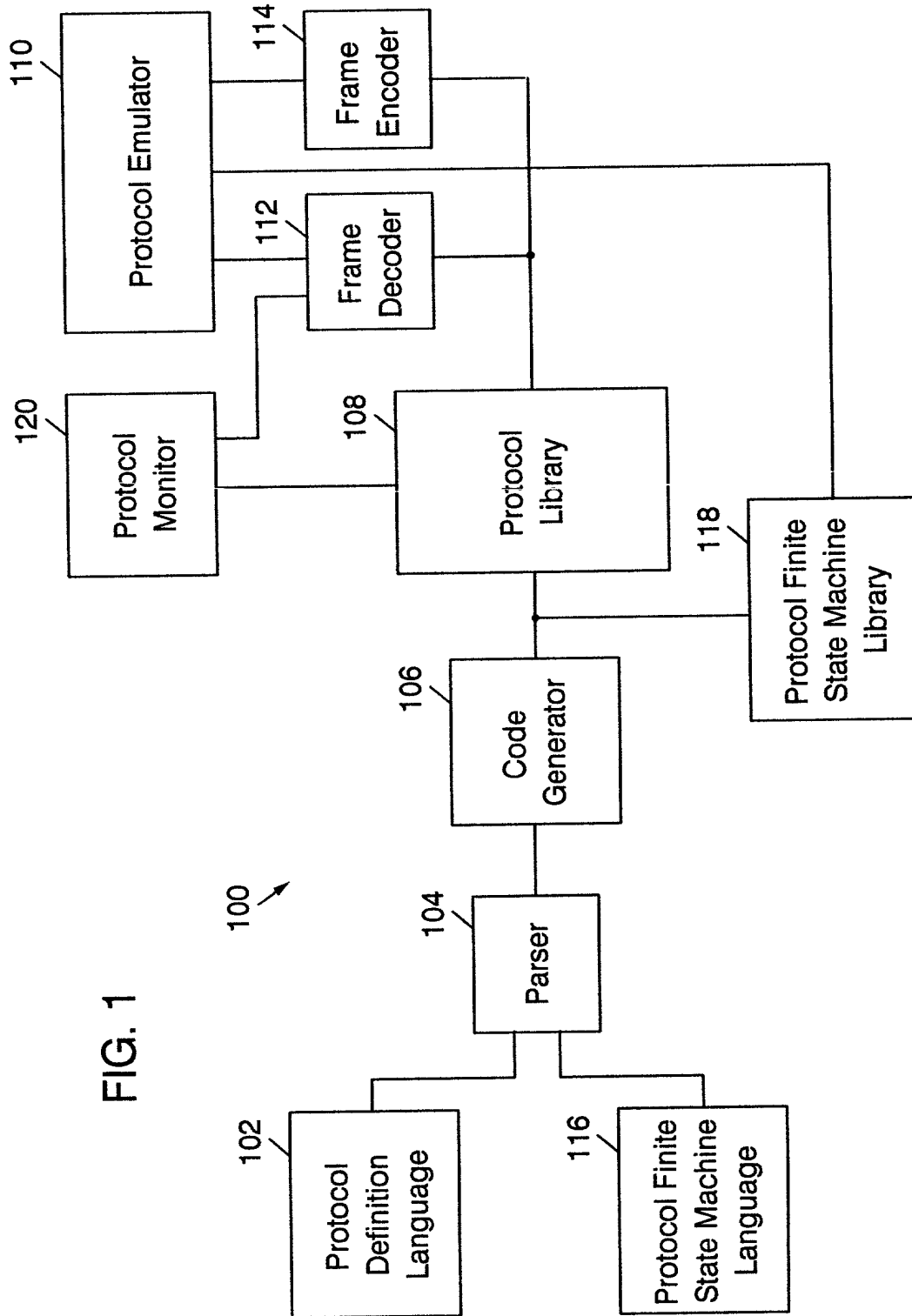
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FIG. 1



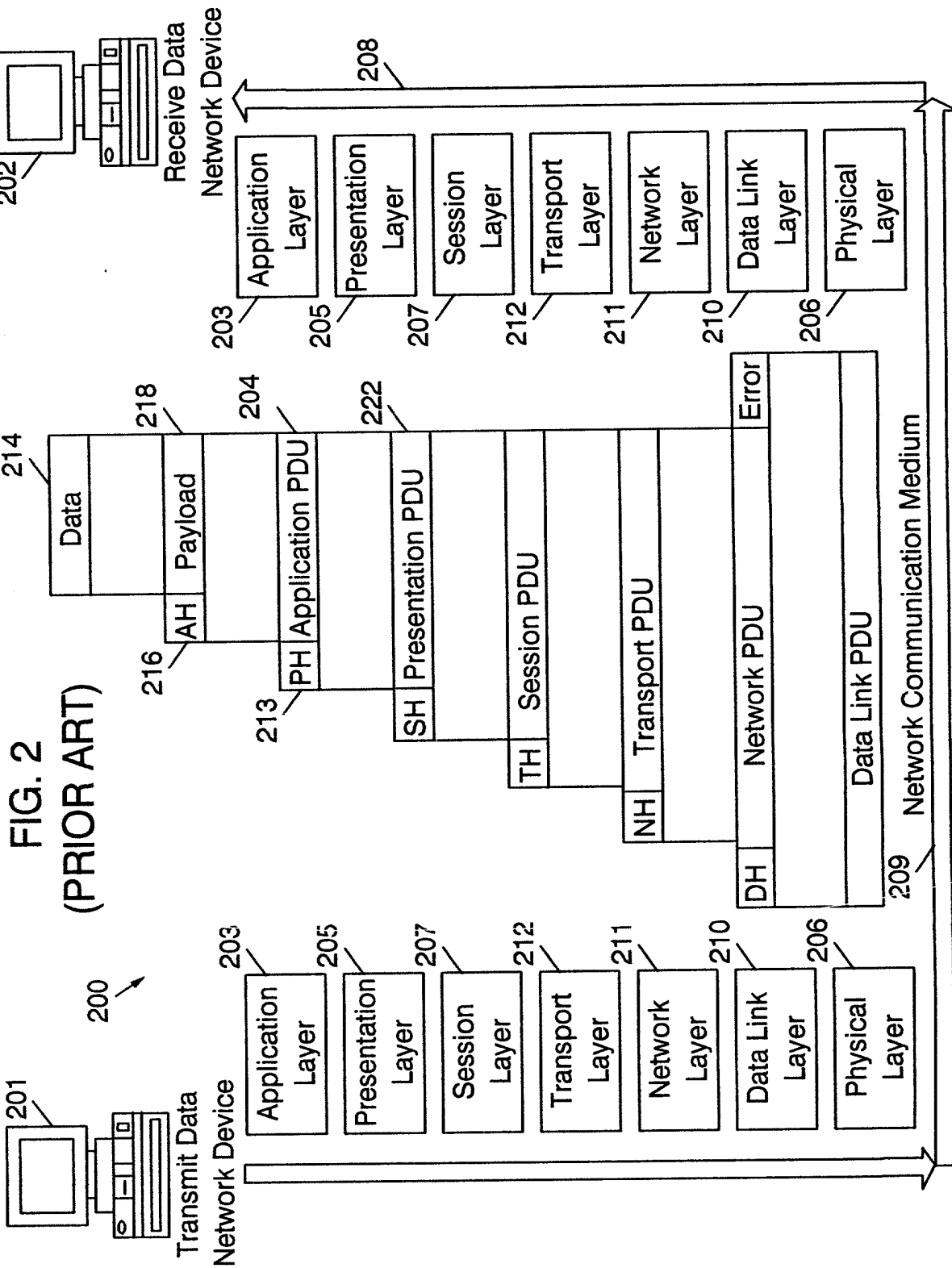


FIG. 3  
(PRIOR ART)

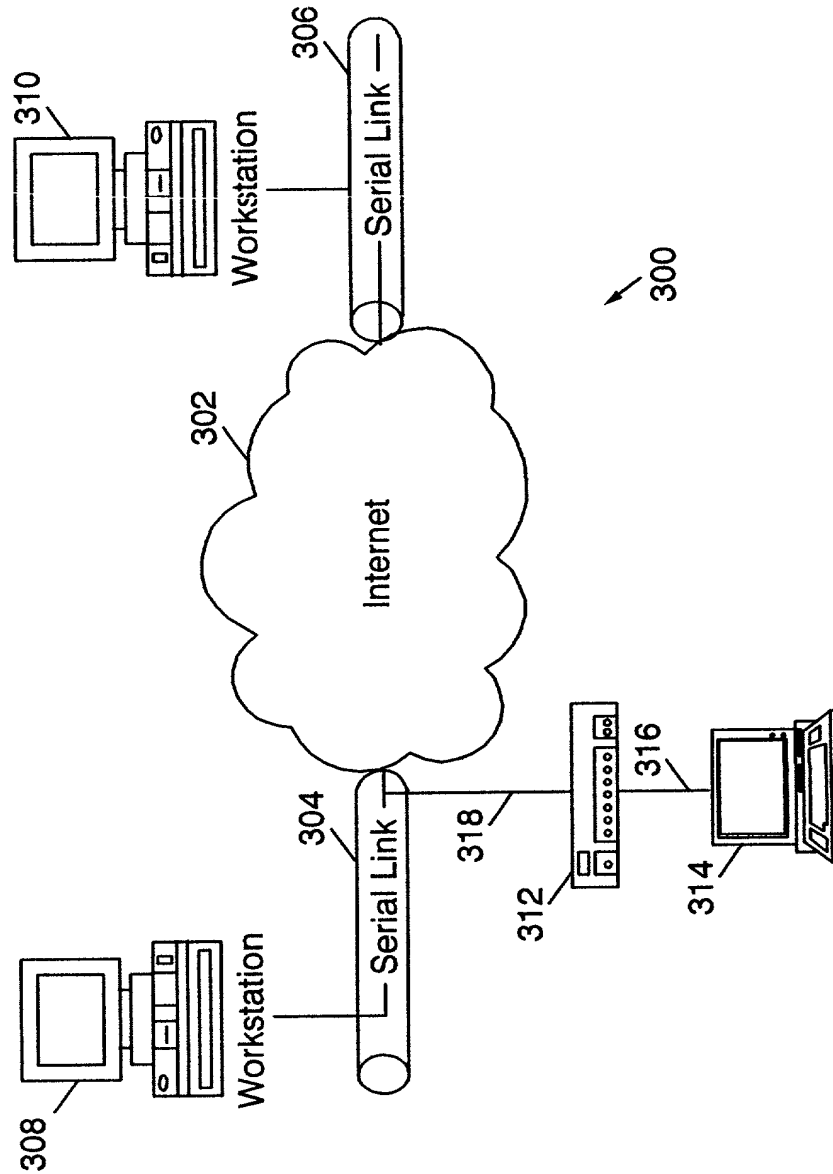
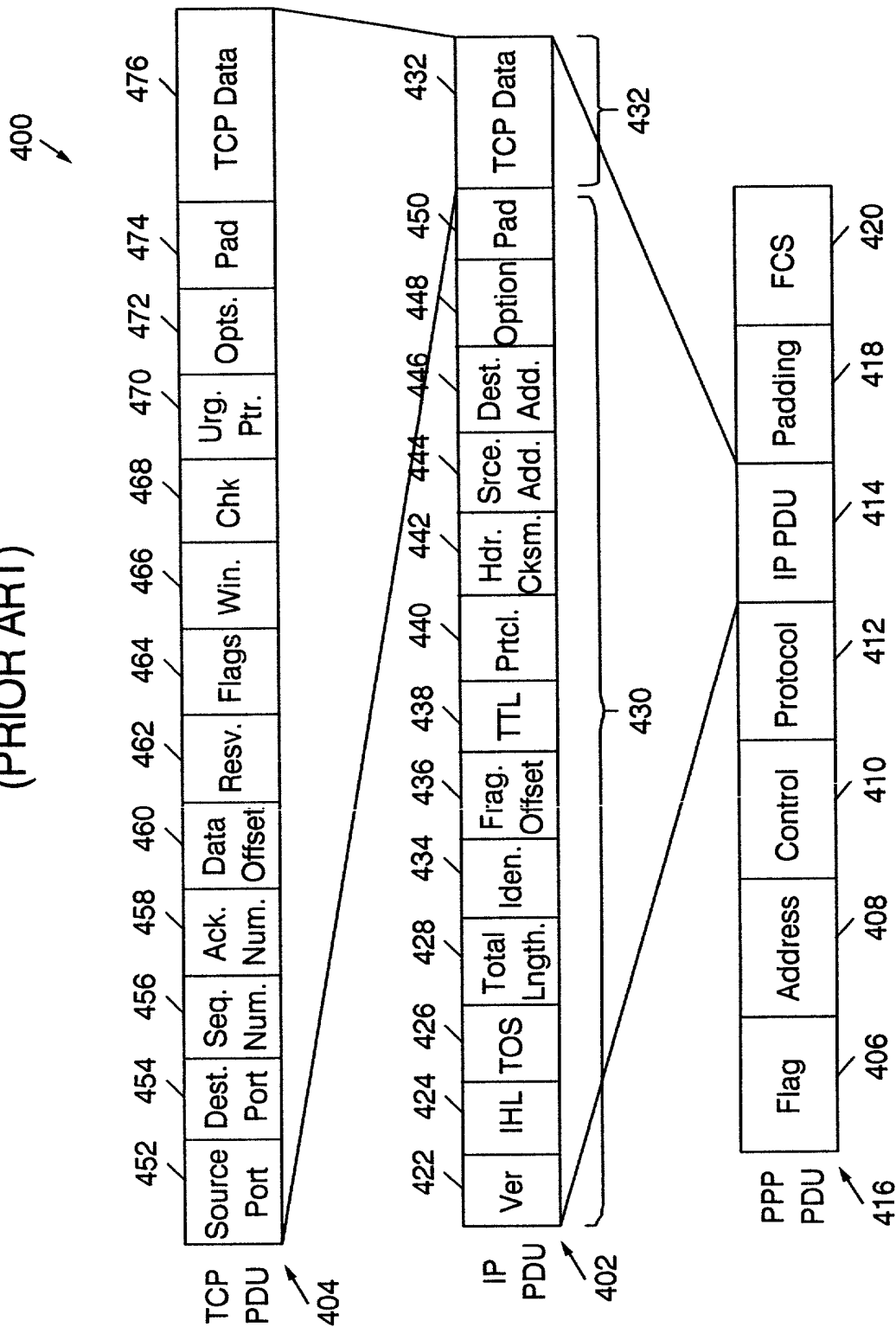


FIG. 4  
 (PRIOR ART)



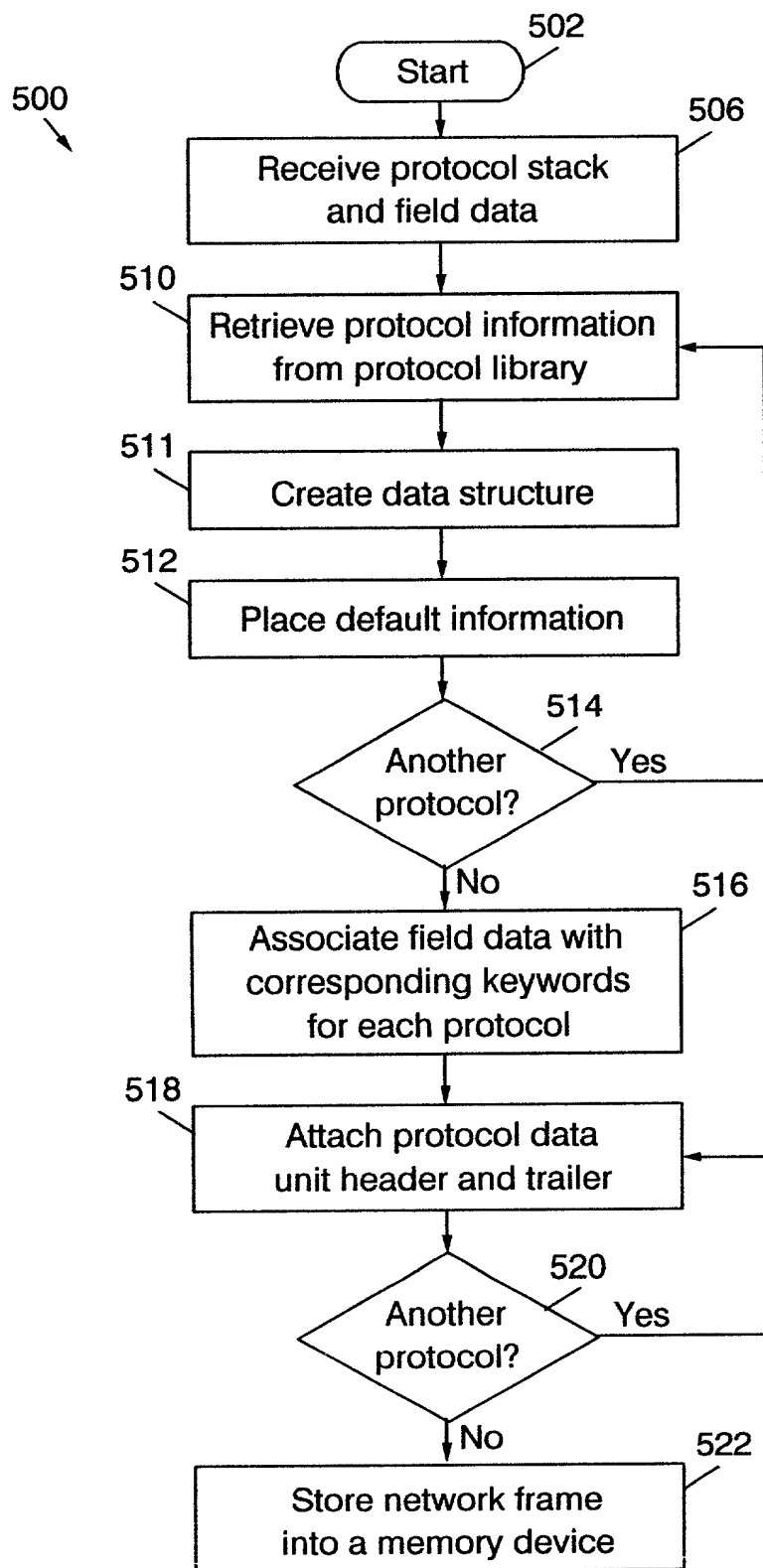


FIG. 5

FIG. 6

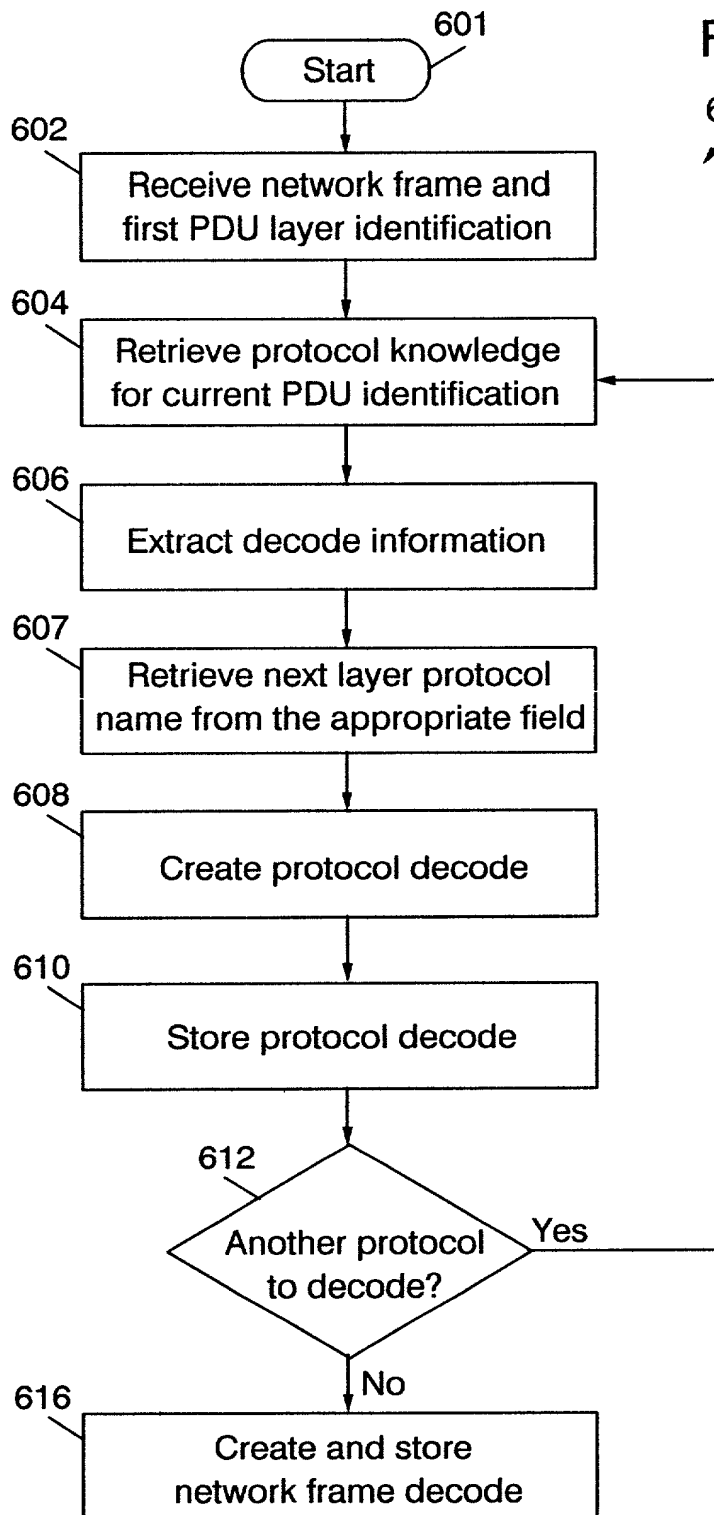


FIG. 7

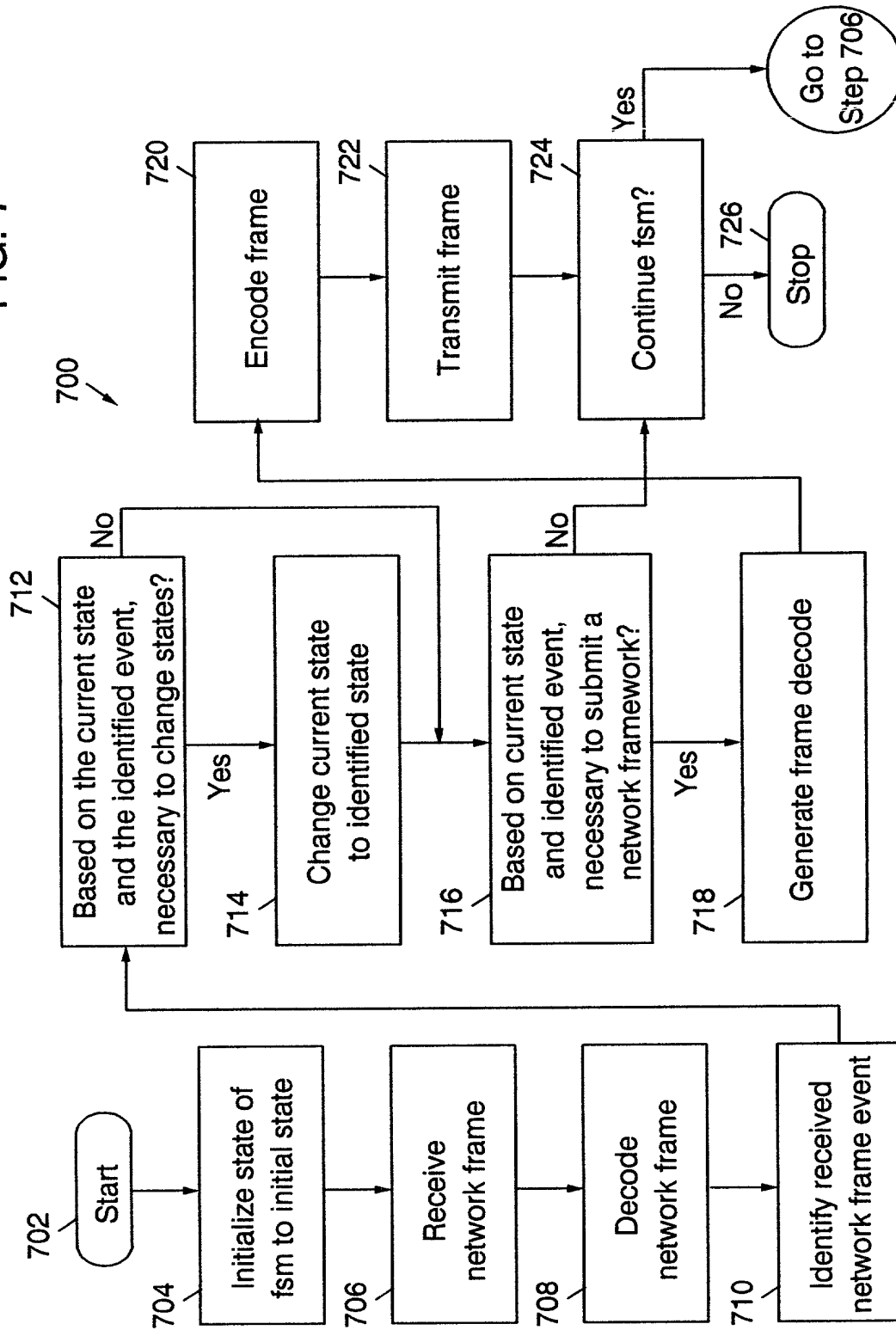


FIG. 8A

802  
protocol "IP" { // -----  
    len = valueof(field "Total Length") \* 8  
    / minLen = 20 \* 8 // just header  
804 maxLen = 65535 \* 8  
    header "IP Header"  
806 / payload "IP Payload"  
808 header "IP Header" { // -----  
810  
    / len = valueof(field "Header Length") \* 32  
812 field "Version" 818  
816 field "Header Length" /  
    / compound\_field "Type Of Service"  
814 field "Total Length"  
824 field "Identification" { len = 16 default = 291 } 820  
    / compound\_field "Flags" 822  
815 field "Fragment Offset" { len = 13 desc = "in 64 bits units" } 826  
    field "Time To Live" { len = 8 default = 30 desc = "seconds" } /  
    / field "Protocol" 830  
828 field "Header Checksum" /  
    / field "Source IP Address" { len = 32 display = ipv4 field\_type =  
832 must\_encode }  
    / field "Destination IP Address" {  
834 len = 32  
        display = ipv4  
        field\_type = must\_encode  
    }  
}

FIG. 8B

816

```
repeat {  
    len=sizeof(field "Header Length") - 5 ) * 32 // includes padding  
    compound_field "Options"  
}  
  
field "Version" {  
    len=4  
    default=4  
    possible_values={  
        0,15:"Reserved"  
        1-3:"Unassigned"  
        6-14:"Unassigned"  
    }  
    4:"IP Internet Protocol"  
    5:"ST ST Datagram Mode"  
}  
  
field "Header Length" {  
    len=4  
    minValue=5  
    desc="in 32 bit units"  
    default=eval_fn(len, "IP", "IP Header", "/32")  
}  
  
field "Total Length" {  
    minValue=20  
    len=16  
    desc="in octets include header length"  
    default=eval_fn(len, "IP", "IP", "/8")  
}  
  
field "Header Checksum" {  
    len=16  
    default=eval_fn(checksum, "IP", "IP Header")  
    display=hex  
}
```

FIG. 8C

```
compound_field "Type Of Service" { // -----
    display=hex
    field "precedence" {
        len=3
        possible_values= {
0:"Routine"
1:"Priority"
2:"Immediate"
3:"Flash"
4:"Flash override"
5:"CRITIC/ECP"
6:"Internetwork Control"
7:"Network Control"
        }}
    field "Delay" {
        len=1
        possible_values={0:"normal" 1:"low"}}
    field "Throughput" {
        len=1
        possible_values={0:"normal" 1:"high"}}
    field "Reliability" {
        len=1
        possible_values={0:"normal" 1:"high"}}
    field "Monetary Cost" {
        len=1
        possible_values={0:"normal" 1:"low"}}
    field "Unused" {
        len=1
        possible_values={0:"valid"}}
} // end of field "Type of Service" -----
```

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FIG. 8D

```
compound_field "Flags" {
    len=3
    display=hex
field "Reserved" {
    len=1
    possible_values={0:"valid"}}

field "Fragment" {
    len=1
    possible_values={0:"May Fragment" 1:"Don't Fragment"}}
field "Fragments" {
    len=1
    possible_values={0:"last" 1:"more"}}
}

compound_field "Options" {// -----
    optional = (valueof(field "Header Length") > 5)
    compound_field "Option Tuple"
    {
len=8;
display=hex
field "Copied Flag" {
    len=1
    possible_values={0:"not copied into all fragments
0:"not copied into all fragments on fragmentation"
1:"copied into all fragments on fragmentation"
}}
field "Option Class" {
    len=2
    possible_values={
0:"control"
1:"reserved for future use"
2:"debugging and measurement"
3:"reserved for future use"
}}
}}
```

FIG. 8E

```
field "Option Number" {
    len=5
    field_type=mulopt_other_fld
    possible_values={
        0:"end of option list"
        1:"no operation"
        2:"security"
        3:"loose source routing"
        4:"internet timestamp"
        7:"record route"
        8:"stream ID"
        9:"strict source routing"
    }
}

switch(valueof(field "Option Number")){
    0:null
    1:null
    2:compound_field "Security"
    3:compound_field "Loose Source Routing"
    9:compound_field "Strict Source Routing"
    7:compound_field "Record Route"
    8:compound_field "Stream ID"
    4:compound_field "Internet Timestamp"
}

compound_field "Security"{
    len=80
    field "Security Length" {
        len=8
        possible_values={0x0b:"valid"}}}
```

FIG. 8F

```
field "Security: Security"
field "Compartments" {len=16}
field "Handling Restrictions" {len=16}
field "Transmission Control Code" {len=24}

field "Security Security" {
len=16
possible_values={
0:"unclassified"
0xf135:"confidential"
0x0789a:"EFTO"
0xbc4d:"MMMM"
0x5e26:"PROG"
0xaf13:"Restricted"
0xd788:"Secret"
0x6bc5:"Top Secret"
0x35e2,0x9af1,0x4d78,0x24bd,0x135e,0x89af,0xc4d6,0xe26b:
"Reserved for future use"
}}
}

compound_field "Strict Source Routing" {
len=(valueof(field "Strict Source Routing Length")-1)*8
field "Strict Source Routing Length" {len=8 }
field "Strict Source Routing Pointer" {len=8 minValue=4}

repeat {
len=(valueof(field "Strict Source Routing Length")-3)*8
field "source address" {len=32 display=ipv4}
}
}
```

FIG. 8G

```
compound_field "Loose Source Routing" {
  len=(valueof(field "Loose Source Routing Length")-1)*8
  field "Loose Source Routing Length" {len=8 }
  field "Loose Source Routing Pointer" {len=8 minValue=4}
  repeat {
    len=(valueof(field "Loose Source Routing Length")-3)*8
    field "source address" {len=32 display=ipv4}
  }
}

compound_field "Record Routing" {
  len=(valueof(field "Record Routing Length")-1)*8
  field "Record Routing Length" {len=8 }
  field "Record Routing Pointer" {len=8 minValue=4}
  repeat {
    len=(valueof(field "Record Routing Length")-3)*8
    field "source address" {len=32 display=ipv4}
  }
}

compound_field "Stream ID" {
  len=24
  field "Stream ID Length" {
    len=8
    default=4
    possible_values=
      0x04:"valid"
  }
  field "ID" {len=16 default=4}
}
```

FIG. 8H

```
compound_field "Internet Timestamp" {
  field "Internet Timestamp Length" {len=8 }
  field "Internet Timestamp Pointer" {len=8 }
  field "Overflow" {
    len=4
    desc="number of IP modules that cannot register timestamps"
  }
  field "Flag" {
    len=4
    possible_values=1
    0:"time stamps only, stored in consecutive 32-bit words"
    1:"each timestamp is preceded with internet address"
    3:"the internet address fields are prespecified"
  }
}

} // end of Internet Timestamp
} // end of field "option" -----
} // end of field "IP" .-----

field "Protocol" {

len=8
default=255
field_type = mulopt_prctl_fld
display=hex
possible_values={ // -----
  0:"HOPOPT (IPv6 Hop-by-Hop Option)"
  1:"ICMP (Internet Control Message)"
  2:"IGMP (Internet Group Management)"
  3:"GGP (Gateway-to-Gateway)"
```

FIG. 81

- 4:"IP (IP in IP encapsulation)"
- 5:"ST (Stream)"
- 6:"TCP"
- 7:"CBT"
- 8:"EGP (Exterior Gateway Protocol)"
- 9:"IGP (any private interior gateway)"
- 10:"BBN-RCC-MON (BBN RCC Monitoring)"
- 11:"NVP-II (Network Voice Protocol)"
- 12:"PUP"
- 13:"ARGUS"
- 14:"EMCON"
- 15:"XNET (Cross Net Debugger)"
- 16:"CHAOS"
- 17:"UDP"
- 18:"MUX (Multiplexing)"
- 19:"DCN-MEAS (DCN Measurement Subsystems)"
- 20:"HMP (Host Monitoring)"
- 21:"PRM (Field Radio Measurement)"
- 22:"XNS-IDP (XEROX NS IDP)"
- 23:"TRUNK-1 (Trunk-1)"
- 24:"TRUNK-2 (Trunk-2)"
- 25:"LEAF-1 (Leaf-1)"
- 26:"LEAF-2 (Leaf-2)"
- 27:"RDP (Reliable Data Protocol)"
- 28:"IRTP (Internet Reliable Transaction)"
- 29:"ISO-TP4 (ISO Transport Protocol Class 4)"
- 30:"NETBLT (Bulk Data Transfer Protocol)"
- 31:"MFE-NSP (MFE Network Services Protocol)"
- 32:"MERIT-INP (MERIT Internodal Protocol)"
- 33:"SEP (Sequential Exchange Protocol)"
- 34:"3PC (Third Party Connect Protocol)"
- 35:"IDPR (Inter-Domain Policy Routing Protocol)"
- 36:"XTP (XTP)"

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## FIG. 8J

- 37:"DDP (Datagram Delivery Protocol)"
- 38:"IDPR-CMTP (IDPR Control Message Transport Protocol)"
- 39:"TP++ (TP++ Transport Protocol)"
- 40:"IL (IL Transport Protocol)"
- 41:"IPv6 (IPv6)"
- 42:"SDRP (Source Demand Routing Protocol)"
- 43:"IPv6-Route (Routing Header for IPv6)"
- 44:"IPv6-Frag (Fragment Header for IPv6)"
- 45:"IDRP (Inter-Domain Routing Protocol)"
- 46:"RSVP (Reservation Protocol)"
- 47:"GRE (General Routing Encapsulation)"
- 48:"MHRP (Mobile Host Routing Protocol)"
- 49:"BNA"
- 50:"ESP (Encap Security Payload for IPv6)"
- 51:"AH (Authentication Header for IPv6)"
- 52:"I-NLSP (Integrated Net Layer Security TUBA)"
- 53:"SWIPE (IP with Encryption)"
- 54:"NARP (NBMA Address Resolution Protocol)"
- 55:"MOBILE (IP Mobility)"
- 56:"TLSP (Transport Layer Security Protocol)"
- 57:"SKIP"
- 58:"IPv6-ICMP (ICMP for IPv6)"
- 59:"IPv6-NoNxt (No Next Header for IPv6)"
- 60:"IPv6-Opts (Destination Options for IPv6)"
- 61:"AHP (Any Host Internal Protocol)"
- 62:"CFTP (CFTP)"
- 63:"ALN (Any Local Network)"
- 64:"SAT-EXPAK (SATNET and Backroom EXPAK)"
- 65:"KRYPTOLAN (Kryptolan)"
- 66:"RVD (MIT Remote Virtual Disk Protocol)"
- 67:"IPPC (Internet Pluribus Field Core)"
- 68:"ADFS (Any Distributed File System)"
- 69:"SAT-MON (SATNET Monitoring)"
- 70:"VISA (VISA Protocol)"

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FIG. 8K

- 71:"IPCV (Internet Field Core Utility)"
- 72:"CPNX (Computer Protocol Network Executive)"
- 73:"CPHB (Computer Protocol Heart Beat)"
- 74:"WSN (Wang Span Network)"
- 75:"PVP (Field Video Protocol)"
- 76:"BR-SAT-MON (Backroom SATNET Monitoring)"
- 77:"SUN-ND (SUN ND PROTOCOL-Temporary)"
- 78:"WB-MON (WIDEBAND Monitoring)"
- 79:"WB-EXPAK (WIDEBAND EXPAK)"
- 80:"ISO-IP (ISO Internet Protocol)"
- 81:"VMTP"
- 82:"SECURE-VMTP"
- 83:"VINES"
- 84:"TTP"
- 85:"NSFNET-IGP"
- 86:"DGP (Dissimilar Gateway Protocol)"
- 87:"TCF"
- 88:"EIGRP"
- 89:"OSPF"
- 90:"Sprite-RPC (Sprite RPC Protocol)"
- 91:"LARP (Locus Address Resolution Protocol)"
- 92:"MTP (Multicast Transport Protocol)"
- 93:"AX.25 (AX.25 Frames)"
- 94:"IPIP (IP-within-IP Encapsulation Protocol)"
- 95:"MICP (Mobile Internetworking Control Pro)"
- 96:"SCC-SP (Semaphore Communications Sec. Pro)"
- 97:"ETHERIP (Ethernet-within-IP Encapsulation)"
- 98:"ENCAP (Encapsulation Header)"
- 99:"APES (Any Private Encryption Scheme)"
- 100:"GMTP"
- 101:"IFMP (Ipsilon Flow Management Protocol)"
- 102:"PNNI (PNNI over IP)"
- 103:"PIM (Protocol Independent Multicast)"
- 104:"ARIS"

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FIG. 8L

105:"SCPS"  
106:"QNX"  
107:"A/N (Active Networks)"  
108:"IPPCP (IP Payload Compression Protocol)"  
109:"SNP (Sitara Networks Protocol)"  
110:"Compaq-Peer (Compaq Peer Protocol)"  
111:"IPX-in-IP"  
112:"VRRP (Virtual Router Redundancy Protocol)"  
113:"PGM (PGM Reliable Transport Protocol)"  
114:"AHOP (Any 0-hop protocol)"  
115-254:"Unassigned"  
255:"Reserved"  
}} // end of field "protocol" -----  
  
} // end of field "IP header" -----  
  
836  
  payload "IP Payload" { // -----  
    switch(valueof(field "Protocol")) {  
838      1:protocol "ICMP"  
      2:protocol "IGMP"  
      6:protocol "TCP"  
      17:protocol "UDP"  
      46:protocol "RSVP"  
      47:protocol "GRE"  
      89:protocol "OSPF"  
    }  
  } // end of packet "IP payload" -----  
}

FIG. 9A

```
*/
/*****
Constants
*****/
//===== LCP Options =====
int OPT_PASSIVE = 1; // Don't die if we don't get a response
int OPT_RESTART = 2; // Treat 2nd OPEN as DOWN, UP
int OPT_SILENT = 4; // Wait for peer to speak first

//===== LCP States =====
int INITIAL_STATE = 0;
int STARTING_STATE = 1;
int CLOSED_STATE = 2;
int STOPPED_STATE = 3;
int CLOSING_STATE = 4;
int STOPPING_STATE = 5;
int REQ_SENT_STATE = 6;
int ACK_RCVD_STATE = 7;
int ACK_SENT_STATE = 8;
int OPENED_STATE = 9;

//===== LCP Events =====
int UP_EVENT = 0;
int DOWN_EVENT = 1;
int OPEN_EVENT = 2;
int CLOSE_EVENT = 3;
int TIMEOUT_POS_EVENT = 4;
```

FIG. 9B

```

int TIMEOUT_NEG_EVENT = 5;
int RCV_CFG_REQ_POS_EVENT = 6;
int RCV_CFG_REQ_NEG_EVENT = 7;
int RCV_CFG_ACK_EVENT = 8;
int RCV_CFG_NACK_EVENT = 9;
int RCV_TERM_REQ_EVENT = 10;
int RCV_TERM_ACK_EVENT = 11;
int RCV_UNKN_CODE_EVENT = 12;
int RCV_CODE_REJECT_POS_EVENT = 13;
int RCV_CODE_REJECT_NEG_EVENT = 14;
int RCV_ECHO_REQ_REPLY_EVENT = 15;

```

```

//===== Transition Constants =====
int TRANSITION_CNST_FALSE = 0;
int TRANSITION_CNST_TRUE = 1;

```

```

902_fsm "LCP"
{
904_state INITIAL_STATE
926 {
928_OPEN_EVENT InitialStOpenEvent
} // INITIAL

```

924 ↗

CLOSED\_STATE  
STARTING\_STATE

FIG. 9C

```
906 state STARTING_STATE
{
    UP_EVENT
    /
    switch (enabledSilent())
    /
    TRANSITION_CNST_TRUE: StareingStUpEvEnabledSilentTrue
    STOPPED_STATE
    TRANSITION_CNST_FALSE: StareingStUpEvEnabledSilentFalse
    REQ_SENT_STATE
    }
    CLOSE_EVENT -
    } // STARTING
908 state CLOSED_STATE
{
    DOWN_EVENT
    /
    switch (enabledSilent())
    /
    INITIAL_STATE
```

FIG. 9D

```

{
  /
  /  TRANSITION_CNST_TRUE:  ClosedStOpenEvEnabledSilentTRUE
  STOPPED_STATE  /
  /  TRANSITION_CNST_FALSE:  ClosedStOpenEvEnabledSilentFALSE
  REQ_SENT_STATE  /
  /
  /  RCV_CFG_REQ_POS_EVENT      ClosedStRcvCfgReqPosEv      CLOSED_STATE
  RCV_CFG_REQ_NEG_EVENT      ClosedStRcvCfgReqNegEv      CLOSED_STATE
  RCV_CFG_ACK_EVENT          ClosedStRcvCfgAckEv          CLOSED_STATE
  RCV_CFG_NACK_EVENT          ClosedStRcvCfgNackEv          CLOSED_STATE
  RCV_CODE_REJECT_POS_EVENT   RcvCodeRejectPosEv          CLOSED_STATE
  RCV_CODE_REJECT_NEG_EVENT   ClosedStRcvCodeRejectNegEv   CLOSED_STATE
  RCV_ECHO_REQ_REPLY_EVENT    RcvEchoReqReplyEv           CLOSED_STATE
  /
  /  // CLOSED
  /  910 state STOPPED_STATE
  /  {
  /  DOWN_EVENT
  /  OPEN_EVENT
  /
  /  switch(enabledRestart ())
  /
  /  {
  /
  /  /  TRANSITION_CNST_TRUE:  StoppedStOpenEvEnabledRestartTRUE  STOPPED_STATE
  /
  /

```

FIG. 9E

```

    }

    CLOSE_EVENT
    RCV_CFG_REQ_POS_EVENT
    RCV_CFG_REQ_NEG_EVENT
    RCV_CFG_ACK_EVENT
    RCV_CFG_NACK_EVENT
    RCV_CODE_REJECT_POS_EVENT
    RCV_CODE_REJECT_NEG_EVENT
    RCV_ECHO_REQ_REPLY_EVENT
    } // STOPPED

    912 state CLOSING_STATE
    {
        DOWN_EVENT
        OPEN_EVENT
        TIMEOUT_POS_EVENT
        TIMEOUT_NEG_EVENT
        RCV_TERM_ACK_EVENT
        RCV_CODE_REJECT_POS_EVENT
        RCV_CODE_REJECT_NEG_EVENT
        RCV_ECHO_REQ_REPLY_EVENT
    } // CLOSING

    CLOSED_STATE
    ACK_SENT_STATE
    REQ_SENT_STATE
    STOPPED_STATE
    STOPPED_STATE
    STOPPED_STATE
    STOPPED_STATE
    STOPPED_STATE
    STOPPED_STATE

    StoppedStRcvCfgReqPosEv
    StoppedStRcvCfgReqNegEv
    StoppedStRcvCfgAckEv
    StoppedStRcvCfgNackEv
    RcvCodeRejectPosEv
    StoppedStRcvCodeRejectNegEv
    RcvEchoReqReplyEv

    ClosingStDownEv
    ClosingStOpenEv
    ClosingStTimeoutPosEv
    ClosingStTimeNegEv
    ClosingStRcvTermAckEv
    RcvCodeRejectPosEv
    RcvCodeRejectNegEv
    RcvEchoReqReplyEv

    INITIAL_STATE
    STOPPING_STATE
    CLOSING_STATE
    CLOSED_STATE
    CLOSED_STATE
    CLOSING_STATE
    CLOSED_STATE
    CLOSING_STATE

```

FIG. 9F

```

914 state STOPPING_STATE
{
    DOWN_EVENT
    CLOSE_EVENT
    TIMEOUT_POS_EVENT
    TIMEOUT_NEG_EVENT
    RCV_TERM_ACK_EVENT
    RCV_CODE_REJECT_POS_EVENT
    RCV_CODE_REJECT_NEG_EVENT
    RCV_ECHO_REQ_REPLY_EVENT
} // STOPPING

```

```

    StoppingStDownEv
    StoppingStTimeoutPosEv
    StoppingStTimeNegEv
    StoppingStRcvTermAckEv
    RcvCodeRejectPosEv
    RcvCodeRejectNegEv
    RcvEchoReqReplyEv

```

```

STARTING_STATE
CLOSING_STATE
STOPPING_STATE
STOPPED_STATE
STOPPED_STATE
STOPPING_STATE
STOPPED_STATE
STOPPING_STATE

```

```

916 state REQ_SENT_STATE
{
    DOWN_EVENT
    CLOSE_EVENT
    TIMEOUT_POS_EVENT
    TIMEOUT_NEG_EVENT
    RCV_CFG_REQ_POS_EVENT
    RCV_CFG_REQ_NEG_EVENT
    RCV_CFG_ACK_EVENT
    RCV_CFG_NACK_EVENT
    RCV_CODE_REJECT_POS_EVENT
    RCV_CODE_REJECT_NEG_EVENT
    RCV_ECHO_REQ_REPLY_EVENT
} // REQ_SENT_STATE

```

```

    ReqSentStDownEv
    ReqSentStCloseEv
    ReqSentStTimeoutPosEv
    ReqSentStTimeNegEv
    ReqSentStRcvCfgReqPosEv
    ReqSentStRcvCfgReqNegEv
    ReqSentStRcvCfgAckEv
    ReqSentStRcvCfgNackEv
    RcvCodeRejectPosEv
    RcvCodeRejectNegEv
    RcvEchoReqReplyEv

```

```

STARTING_STATE
CLOSING_STATE
REQ_SENT_STATE
STOPPED_STATE
ACK_SENT_STATE
REQ_SENT_STATE
ACK_RCVD_STATE
REQ_SENT_STATE
REQ_SENT_STATE
STOPPED_STATE
REQ_SENT_STATE

```

FIG. 9G

```

918 state ACK_RCVD_STATE
{
    DOWN_EVENT
    CLOSE_EVENT
    TIMEOUT_POS_EVENT
    TIMEOUT_NEG_EVENT
    RCV_CFG_REQ_POS_EVENT
    RCV_CFG_REQ_NEG_EVENT
    RCV_CFG_ACK_EVENT
    RCV_CFG_NACK_EVENT
    RCV_TERM_REQ_EVENT
    RCV_TERM_ACK_EVENT
    RCV_UNKN_CODE_EVENT
    RCV_CODE_REJECT_POS_EVENT
    RCV_CODE_REJECT_NEG_EVENT
    RCV_ECHO_REQ_REPLY_EVENT
} // ACK_RCVD_STATE

920 state ACK_SENT_STATE
{
    DOWN_EVENT
    CLOSE_EVENT
    TIMEOUT_POS_EVENT
    TIMEOUT_NEG_EVENT
    AckRcvdStDownEv
    AckRcvdStCloseEv
    AckRcvdStTimeoutPosEv
    AckRcvdStTimeNegEv
    AckRcvdStRcvCfgReqPosEv
    AckRcvdStRcvCfgReqNegEv
    AckRcvdStRcvCfgAckEv
    AckRcvdStRcvCfgNackEv
    AckRcvdStRcvTermReqEv
    -
    -
    RcvCodeRejectPosEv
    RcvCodeRejectNegEv
    RcvEchoReqReplyEv
    AckSentStDownEv
    AckSentStCloseEv
    AckSentStTimeoutPosEv
    AckSentStTimeNegEv
    STARTING_STATE
    CLOSING_STATE
    REQ_SENT_STATE
    STOPPED_STATE
    OPENED_STATE
    ACK_RCVD_STATE
    REQ_SENT_STATE
    REQ_SENT_STATE
    REQ_SENT_STATE
    REQ_SENT_STATE
    ACK_RCVD_STATE
    REQ_SENT_STATE
    STOPPED_STATE
    ACK_RCVD_STATE
    STARTING_STATE
    CLOSING_STATE
    ACK_SENT_STATE
    STOPPED_STATE

```

RCV_CFG_REQ_POS_EVENT	AckSentStRcvCfgReqPosEv	ACK_SENT_STATE
RCV_CFG_REQ_NEG_EVENT	AckSentStRcvCfgReqNegEv	REQ_SENT_STATE
RCV_CFG_ACK_EVENT	AckSentStRcvCfgAckEv	OPENED_STATE
RCV_CFG_NACK_EVENT	AckSentStRcvCfgNackEv	ACK_SENT_STATE
RCV_TERM_REQ_EVENT	AckSentStRcvTermReqEv	REQ_SENT_STATE
RCV_CODE_REJECT_POS_EVENT	RcvCodeRejectPosEv	ACK_SENT_STATE
RCV_CODE_REJECT_NEG_EVENT	RcvCodeRejectNegEv	STOPPED_STATE
RCV_ECHO_REQ_REPLY_EVENT	RcvEchoReqReplyEv	ACK_SENT_STATE

```
} // ACK_SENT_STATE
```

922

state OPENED\_STATE

Y

## DOWN EVENT

OPEN EVENT

**Abstract**

```
switch(enabledRestart())
```

—

Y

~~SECRET~~

```
TRANSITION CNST TRUE: OpenedStOpenEvEnabledRestartTRUE OPENED_STATE
```

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—

OpenedStDownEv

STARTING\_STATE

FOEF90" E5204860

FIG. 9I

CLOSE_EVENT	OpenedStCloseEv	CLOSING_STATE
RCV_CFG_REQ_POS_EVENT	OpenedStCfgReqPosEv	ACK_SENT_STATE
RCV_CFG_REQ_NEG_EVENT	OpenedStRcvCfgReqNegEv	REQ_SENT_STATE
RCV_CFG_ACK_EVENT	OpenedRcvCfgAckEv	REQ_SENT_STATE
RCV_CFG_NACK_EVENT	OpenedStRcvCfgNackEv	REQ_SENT_STATE
RCV_TERM_REQ_EVENT	OpenedStRcvTermReqEv	STOPPING_STATE
RCV_TERM_ACK_EVENT	OpenedStRcvTermAckEv	REQ_SENT_STATE
RCV_CODE_REJECT_POS_EVENT	RcvCodeRejectPosEv	OPENED_STATE
RCV_CODE_REJECT_NEG_EVENT	OpenedStRcvCodeRejectNegEv	STOPPING_STATE
RCV_ECHO_REQ_REPLY_EVENT	RcvEchoReqReplyEv	OPENED_STATE
} // OPENED_STATE		
}		

FIG. 10

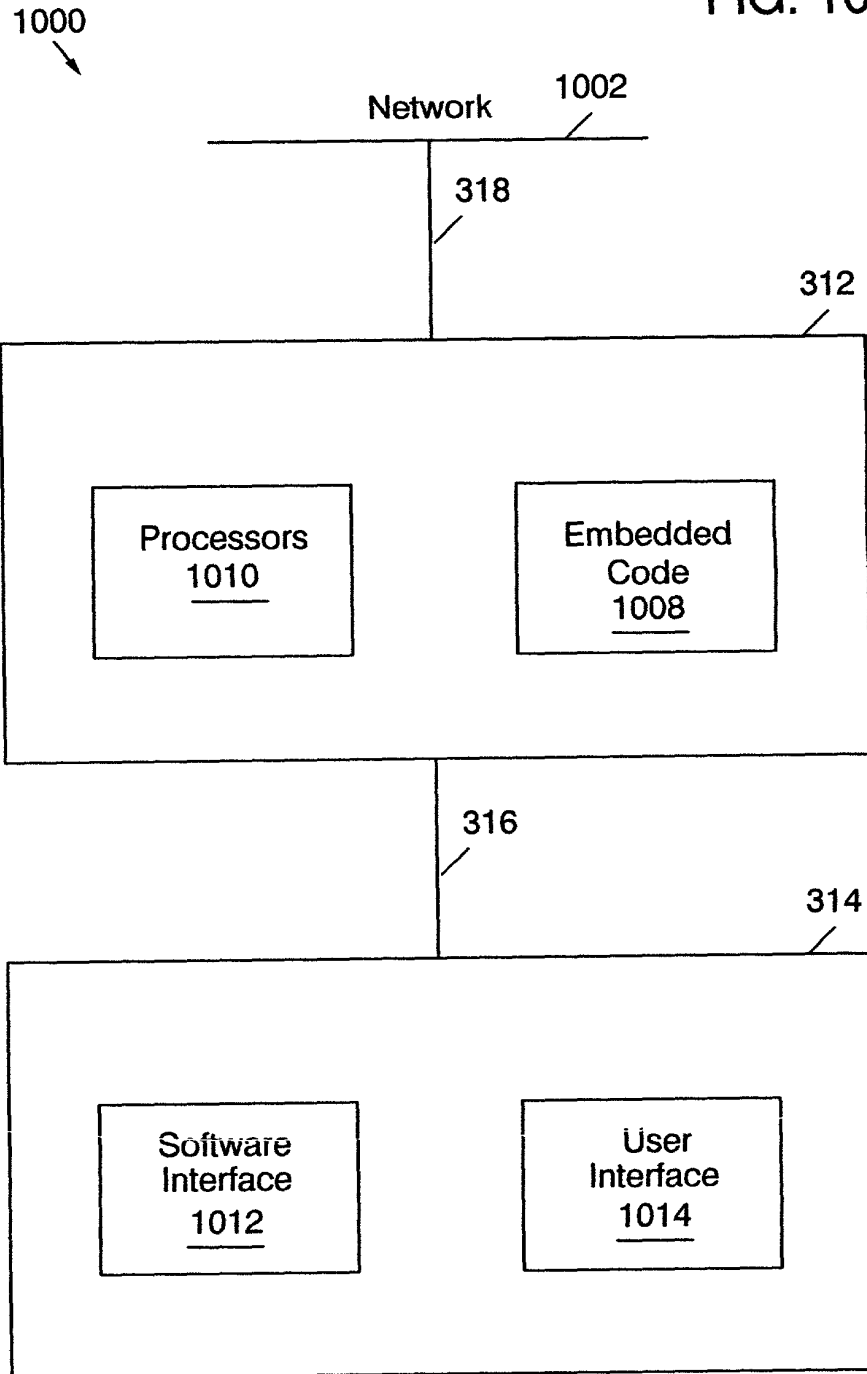


FIG. 11

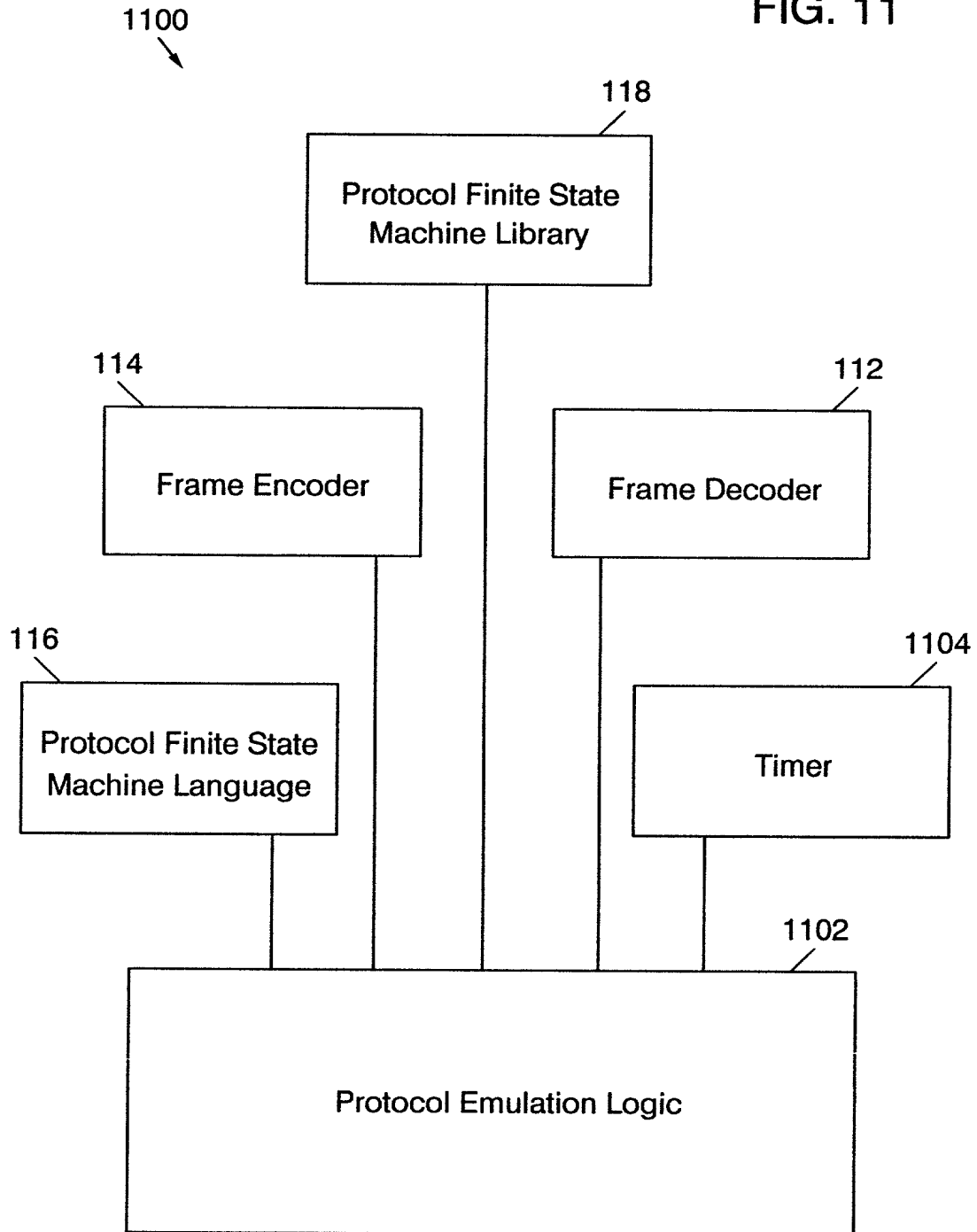


FIG. 12A

1202

Events	State					
	0 Initial	1 Starting	2 Closed	3 Stopped	4 Closing	5 Stopping
Up	2	tc1,6	-	-	-	-
Down	-	-	0	1	0	1
Open	1	1	tc1,3/tc2,6	tc3,3r	5r	5r
Close	0	0	2	2	4	4
TO+	-	-	-	-	4	5
TO-	-	-	-	-	2	3
RCR+	-	-	2	8	4	5
RCR-	-	-	2	6	4	5
RCA	-	-	2	3	4	5
RCN	-	-	2	3	4	5
RTR	-	-	2	3	4	5
RTA	-	-	2	3	2	3
RUC	-	-	2	3	4	5
RXJ+	-	-	2	3	4	5
RXJ-	-	-	2	3	2	3
RXR	-	-	2	3	4	5

FIG. 12B

1204

Events	State			
	6	7	8	9
	Req-Sent	Ack-Rcvd	Ack-Sent	Opened
Up	-	-	-	-
Down	1	1	1	1
Open	6	7	8	tc3,9r
Close	4	4	4	4
TO+	6	6	8	-
TO-	3p	3p	3p	-
RCR+	8	9	8	8
RCR-	6	7	6	6
RCA	7	6	9	6
RCN	6	6	8	6
RTR	6	6	6	5
RTA	6	6	8	6
RUC	6	7	8	9
RXJ+	6	6	8	9
RXJ-	3	3	3	5
RXR	6	7	8	9

[p] Passive option

[r] Restart option

[s] Silent option

// Transition conditions

tc1 - (enabledSilent() == TRUE)

tc2 - (enabledSilent() == FALSE)

tc3 - (enabledRestart() == TRUE)

FIG. 13

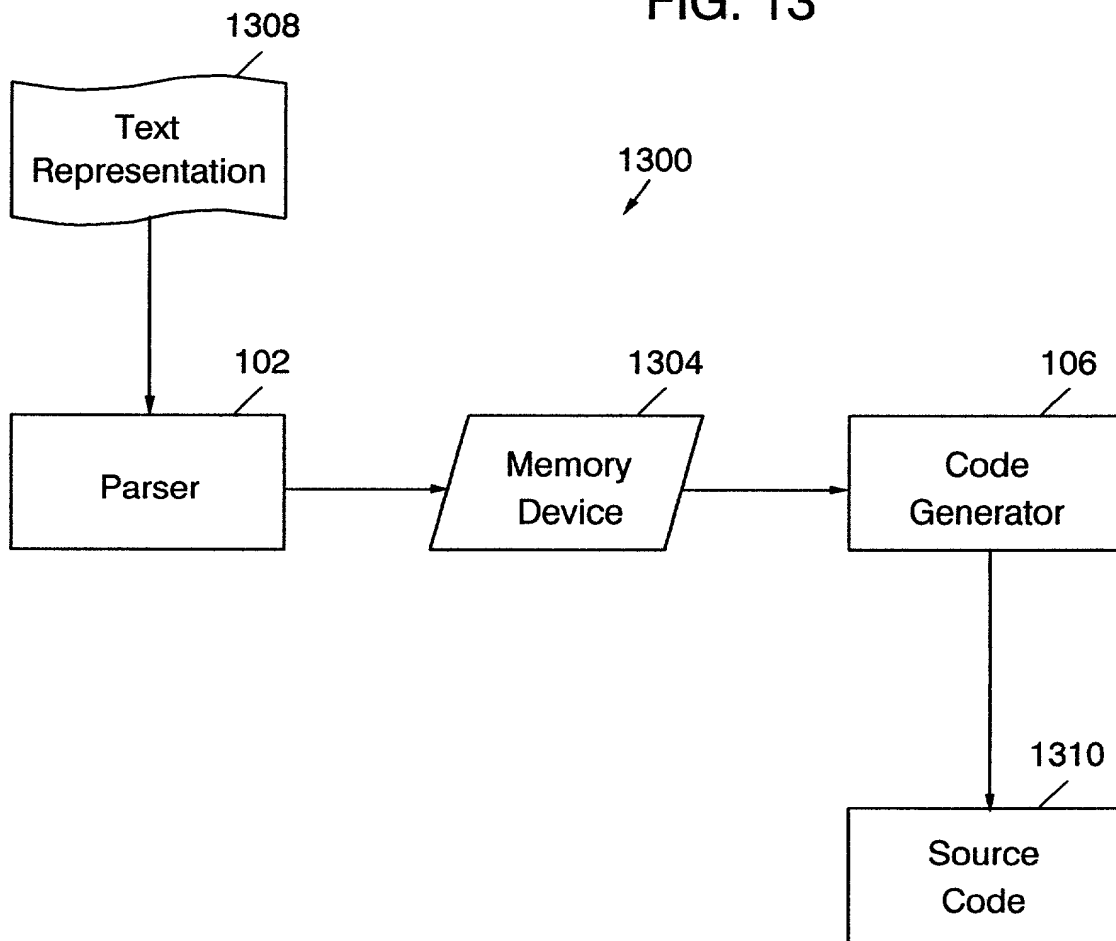


FIG. 14

FIG. 14A	FIG. 14B
----------	----------

FIG. 14A

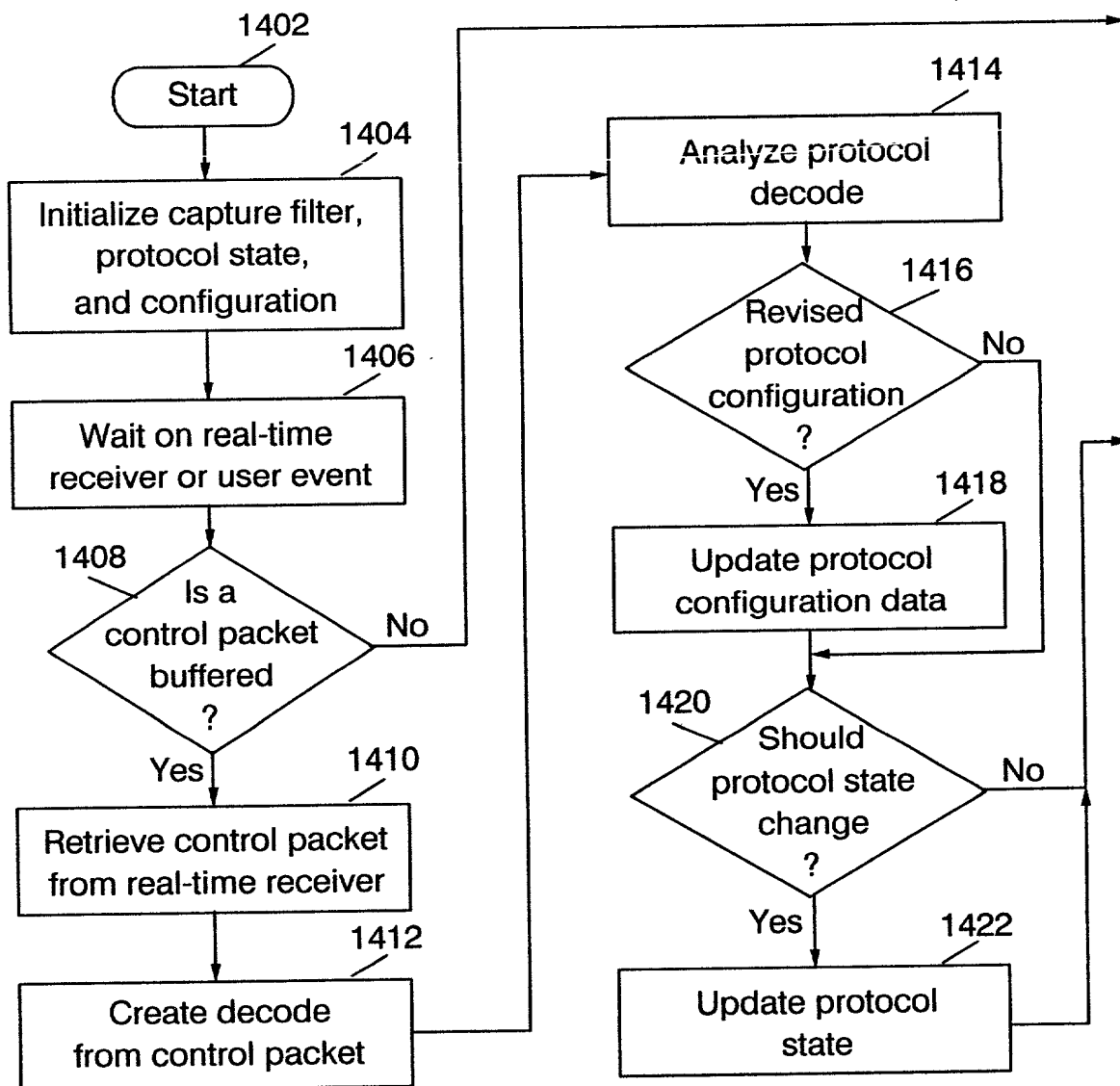


FIG. 14B

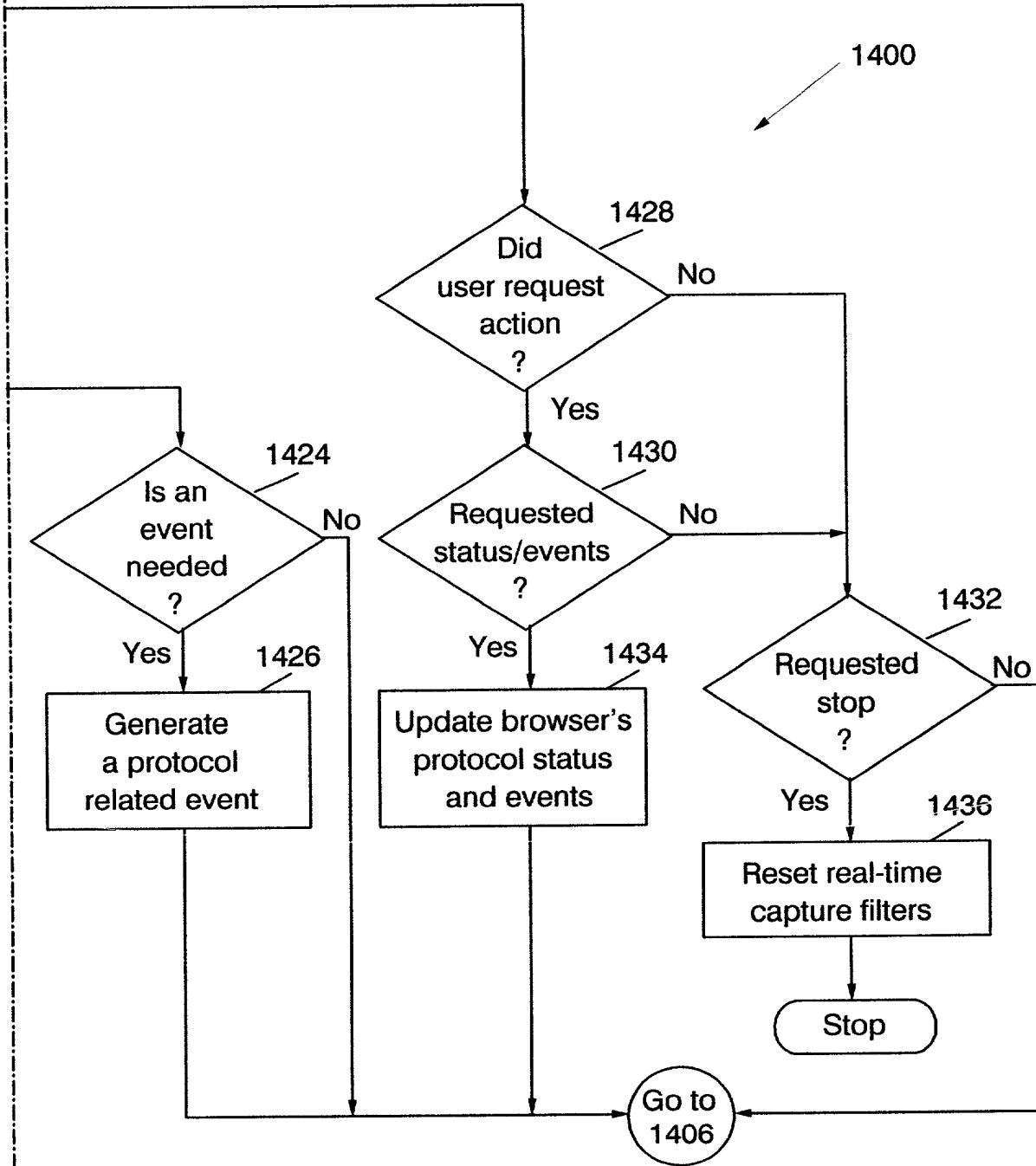


FIG. 15

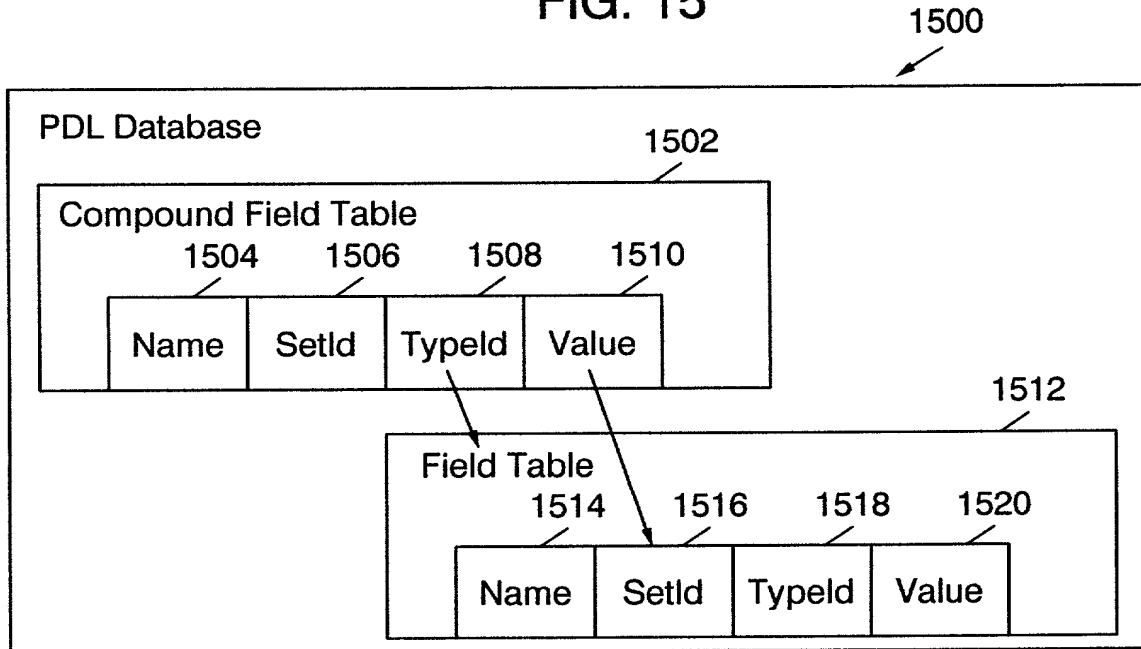


FIG. 18

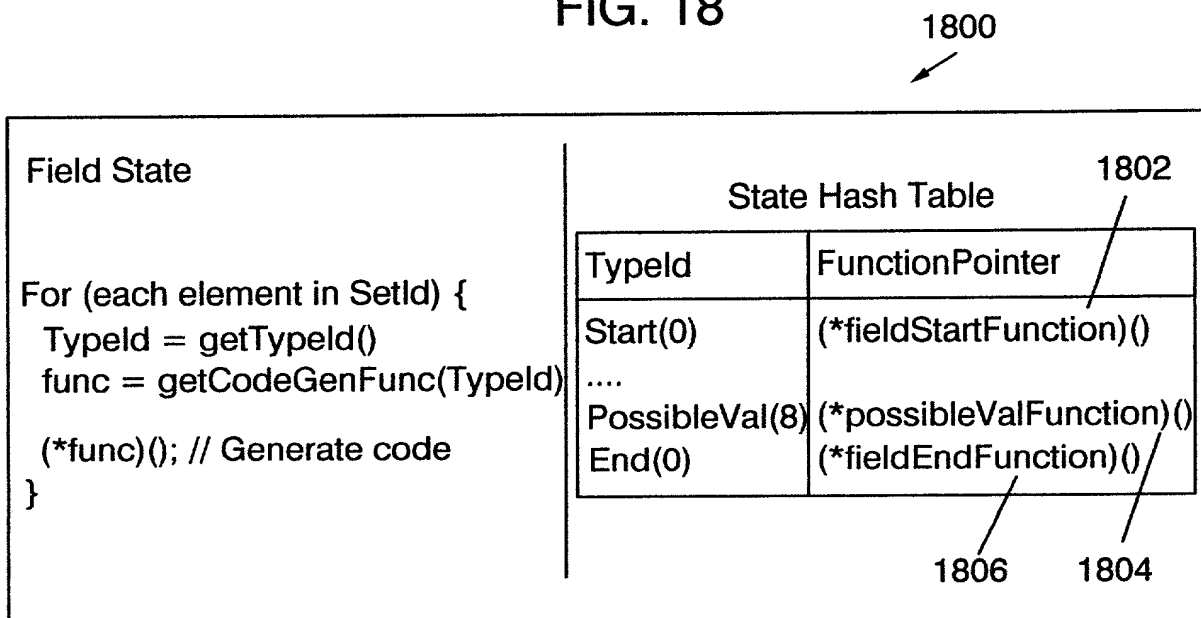


FIG. 16

1600

1610	1602	1604	1606	1608	
Typeld	TypeName	TableName	Type	Comment	
0	Start		Control		
0	ProtocolNames	ProtocolNames			
1	Protocol	Protocol	Compound		
2	Header	Header	Compound		
3	Payload	Payload	Compound		
4	Trailer	Trailer	Compound		
5	CompountField	CompountField	Compound		
6	Repeat	Repeat	Compound		
7	Switch	Switch	Compound		
8	PossibleValues	PossibleValues	Attribute		
9	Field	Field	Simple		
10	Len	Len	Attribute		
11	MinLen	Len	Attribute		
12	MaxLen	Len	Attribute		
13	Display	Display	Attribute		
14	Encode	Encode	Attribute		
15	Default	Default	Attribute		
16	Break	Len	Attribute		
17	Optional	Len	Attribute		
18	Offset	Len	Attribute		
19	Name	Name	Attribute		
20	Description	Description	Attribute		
21	String	String			
22	End	End	Control		
23	DecisiveField	Field	Simple		
24	FieldType	Attribute	Attribute		
28	MinVal	Attribute	Attribute		
29	MaxVal	Attribute	Attribute		
30	Count	Len	Attribute		

1612

FIG. 17

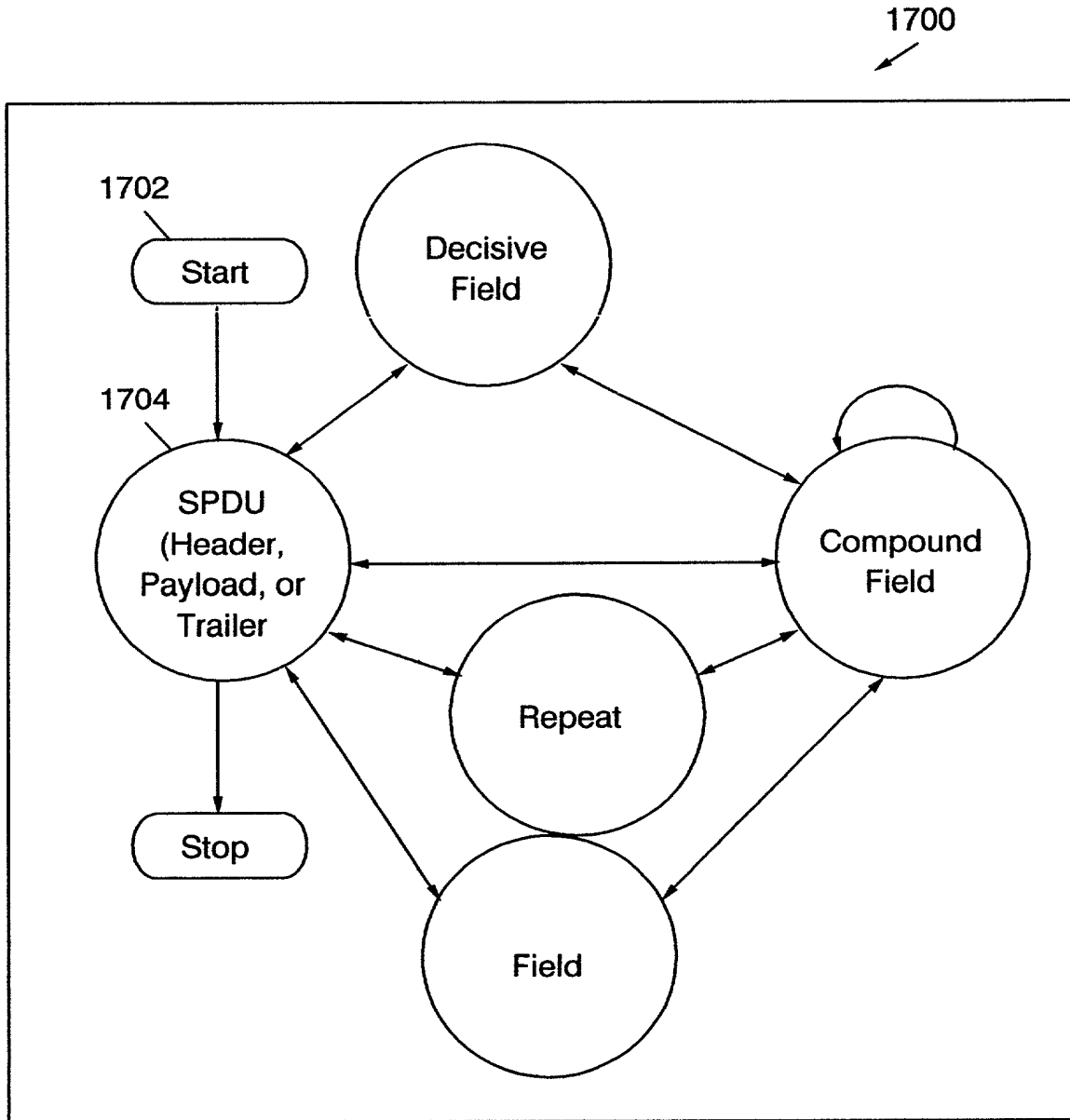


FIG. 19

1900

```

////////////////////////////////////
//Field:protocol.OSPF.header.OSPF.Header.Field.Packet
//
//      Type.PacketType
FldInfo packetType = new FldInfo();
packetType.setName(PACKET_TYPE_STR);

// Possible Values of packetType
HashMap packetTypeValues
    = new HashMap(_hashMapInitialCapacity,_hashMapLoadFactor);
packetTypeValues.put(new FldValue(1),
    HELLO_STR);
packetTypeValues.put(new FldValue(2),
    DATABASE_DESCRIPTION_STR);
packetTypeValues.put(new FldValue(3),
    LINK_STATE_REQUEST_STR);
packetTypeValues.put(new FldValue(4),
    LINK_STATE_UPDATE_STR);
packetTypeValues.put(new FldValue(5),
    LINK_STATE_ACKNOWLEDGMENT_STR);
packetType.setPossibleValues(packetTypeValues);

flds.add(packetType);
// End Field: packetType
////////////////////////////////////

```

1902

(\*fieldStartFunction)()

1904

(\*possibleValFunction)()

1906

(\*fieldEndFunction)()

FIG. 20

2000

FieldId	Field Name	FieldSetId	TypeId	TypeValue	Comment
127570	Packet Type	2	0	0	protocol.OSPF.header.OSPF Header.Field.Packet Type
127571		2	8	1	protocol.OSPF.header.OSPF Header.Field.Packet
127572		2	22	0	protocol.OSPF.header.OSPF Header.Field.Packet Type
127577	Router ID	4	0	0	protocol.OSPF.header.OSPF Header.Field.Router ID
127578		4	10	43298	protocol.OSPF.header.OSPF Header.Field.Router ID.Len
127579		4	13	7	protocol.OSPF.header.OSPF Header.Field.Router ID.Display
127580		4	22	0	protocol.OSPF.header.OSPF Header.Field.Router ID

Possible Values

SetId in Possible Values Table

2002

2004

2006

2008

Start Set

Display

FIG. 21

Protocol	Status	Time	Mode
LCP	Open	09/04/00 08:01:03 AM	Emulate
IPCP	Negotiating	09/04/00 08:01:07 AM	Monitor
MPLSCP	Closed	09/04/00 08:01:05 AM	Monitor
RSVP	N/a	09/04/00 08:01:00 AM	Disabled

FIG. 22

	Rx1	Rx2
Current Status	Open	Negotiating
Loop-back	No	No
Unanswered Echo Requests	0	0
Maximum Receive Unit	512	1500
Asynchronous Character Map	0	0
Authentication Protocol	Unknown	Unknown
Quality Protocol	N/a	N/a
Protocol Field Compression	Off	Off
Address/Control Field Compression	Off	Off
Magic Number	0xFF	0x1FF
FCS Alternative	CCITT 32-bit	CCITT 32-bit

FIG. 23A  
FIG. 23B

FIG. 23

FIG. 23A

Time	Revr	Protocol	MsgType	Event	Synopsis
09/04/00	Rx1	LCP	ConfigReq	Protocol	ACComp:On,Pcomp:On,Magic:0x1ab82049
08:01:01 AM				Negotiating	
09/04/00	Rx2	LCP	ConfigAck	Open	ACComp:On,Pcomp:On,Magic:0x4e3d9123
08:01:01 AM				Protocol	
09/04/00	Rx2	LCP	ConfigReq	Protocol	ACComp:On,Pcomp:On,Magic:0x1ab82049
08:01:02 AM				Negotiating	
09/04/00	Rx1	LCP	ConfigAck	Open	ACComp:On,Pcomp:On,Magic:0x1ab82049
08:01:03 AM				Protocol	
09/04/00	Rx2	IPCP	ConfigReq	Protocol	Local IP: 198.85.38.199
08:01:04 AM				Negotiating	
09/04/00	Rx1	IPCP	ConfigAck	Open	Local IP: 198.85.38.199
08:01:06 AM				Protocol	
09/04/00	Rx1	IPCP	ConfigReq	Protocol	Local IP: 198.85.34.35
08:01:06 AM				Negotiating	
09/04/00	Rx2	IPCP	ConfigAck	Open	Local IP: 198.85.34.35
08:01:06 AM				Protocol	
09/04/00	Rx2	MPLSCP	ConfigReq	Protocol	
08:01:10 AM				Negotiating	
09/04/00	Rx2	MPLSCP	TermReq	Close	
08:01:12 AM				Protocol	
09/04/00	Rx1	RSVP	Rx1	Rx1	Resv Request <session: 198.85.34.45 UDP port
08:11:01 AM					14>

09/04/00 08:11:03 AM	Rx1	RSVP	Rx1	Rx1	Resv Confirm <session: 198.85.34.45 UDP port 14>
09/04/00 08:11:04 AM	Rx2	RSVP	Rx2	Rx2	Path Request <session: 198.85.38.199 UDD port 0x82A>
09/04/00 08:11:06 AM	Rx1	RSVP	Rx1	Rx1	Resv Error <session: 198.85.38.199 UDP port 0x82A>
09/04/00 09:21:10 AM	Rx2	RSVP	Rx2	Rx2	Path Request <session: 198.85.38.199 UDP port 0x82A>
09/04/00 09:21:12 AM	Rx2	RSVP	Rx2	Rx2	Resv Confirm <session: 198.85.38.199 UPD port 0x82A>
09/04/00 09:21:30 AM	Rx1	RSVP	Rx1	Rx1	Path Tear <session: 198.85.34.45 UPD port 14>
09/04/00 09:21:32 AM	Rx2	RSVP	Rx2	Rx2	Resv Tear <session: 198.85.34.45 UPD port 14>
09/04/00 09:21:32 AM	Rx2	RSVP	Rx2	Rx2	Resv Tear <session: 198.85.34.45 UPD port 14>
09/04/00 11:44:30 PM	Rx1	IPCP	TermReq	Close Protocol	
09/04/00 11:44:31 PM	Rx1	IPCP	TermAck	Close Protocol	
09/04/00 11:44:32 PM	Rx1	LCP	TermReq	Close Protocol	
09/04/00 11:44:33 PM	Rx2	LCP	TermAck	Close Protocol	

FIG. 23B